

# WORLD HISTORY STATISTICS LESSON

## COLLABORATIVE PLANNING GUIDE: DOUGLAS COUNTY

<b>Teachers Involved:</b> Suzanne Riches (UCD Teacher Librarian Endorsement)		Paula Busey Teacher Librarian Ms. Schultz World History Teacher
<b>Subject:</b> A Statistical Look at the World: Using GapMinder Insights	<b>Grade Level:</b> 11	<b># Students:</b> 30 X 3 classes
<b>Date:</b> April 7 and 8, 2009	<b>Periods:</b> 1,2,5	<b>Length of Lesson:</b> 90 minutes per lesson

**Essential Question / Topic:** How can we visualize world history and statistical relationships in a way that tracks trends with precision and easy-to-grasp relationships? How do statistics show us the reality of world events?

**Lesson Planning:** Mrs. Schultz teaches World History at ThunderRidge High School. Paula Busey and I found the GapMinder program a year or so ago. Interestingly, we had both seen this work with world statistics on *TED: Ideas Worth Spreading*. I think the program was a feature story on MSNBC. Hans Rosling provides a very interesting discussion of a program he developed to animate world statistics—making relationships and data come to life.

[http://www.ted.com/index.php/talks/hans\\_rosling\\_shows\\_the\\_best\\_stats\\_you\\_ve\\_ever\\_seen.html](http://www.ted.com/index.php/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen.html)

Paula mentioned the program to me on the first day or two of my internship. I told her I had seen the lecture, too. We thought this might present a great lesson for social studies or history classes. Paula knew that Mrs. Schultz is forward-looking and comes to the library frequently, utilizing many different kinds of resources. We called her and told her about our idea. The class was currently covering material around the World Wars. She was very interested. We said that we would try to pull some historical events around WWI and perhaps a few other illustrations of more recent world history that illustrates the ravages of war and poverty. We promised a worksheet and computer time for the students to work with the program.

We worked up the lesson and showed her our ideas. She was excited about the lesson and told us to plan a 90 minute period with her three history classes. We showed her what we would be working with. She let us take it from there.

Information Literacy Standards	Content Standards
<b>21<sup>st</sup> Century Standards</b>  <b>Inquire, think critically and gain knowledge.</b> <b>1.1.1 Follow inquiry-based process.</b> <b>1.1.5 Evaluate information.</b> <b>1.1.7 Make sense of information.</b> <b>1.1.8 Master technology</b> <b>1.1.9 Collaborate with others.</b> <b>Pursue Personal and Aesthetic Growth</b> <b>4.1.8 Use creative and artistic formats to express personal learning.</b>	<b>Colorado Model Content Standards for History</b>  <b>. 1.2 Students use chronology to organize historical events and people.</b> <b>1.3 Students use chronology to examine and explain historical relationships.</b> <b>2.2 Students know how to interpret and evaluate primary and secondary sources of historical information.</b> <b>4.2 Students understand how economic factors have influenced historical events.</b> <b>5.4 Students know the history of relationships among different political powers and the development of international relations.</b>

## Achievement Goals:

What Skills/Knowledge will students gain?	What activities will the students complete?
<b>Students will...</b> <ul style="list-style-type: none"> <li>•Practice the research process and compile information.</li> <li>•Learn to use digital technology in new ways.</li> <li>•Visualize and grasp relationships in UN-reported world data.</li> <li>•Work with statistical relationships</li> <li>•Use primary sources.</li> <li>•Draw inferences based on statistical information and relationships.</li> </ul>	<b>Students will...</b> <ul style="list-style-type: none"> <li>•Watch a demonstration of the GapMinder program, grasping relationships.</li> <li>•Work individually with a worksheet and the GapMinder program.</li> <li>•Use critical thinking to draw inferences from statistics.</li> <li>•Complete a worksheet using these concepts.</li> </ul>

## The Learning Plan:

Responsibilities / Strategies of teacher	Responsibilities / Strategies of Teacher Librarian
<ul style="list-style-type: none"> <li>•Sign up for computer lab time in the library.</li> <li>•Preface lesson with discussion about how valuable statistics can be in understanding and substantiating history.</li> <li>•Collect and record grade on worksheet.</li> <li>•Track student's progress.</li> </ul>	<ul style="list-style-type: none"> <li>•Provide lab and Internet access.</li> <li>•Provide lesson background and demonstration of GapMinder applied to several issues.</li> <li>•Aid students in the research process.</li> <li>•Help guide and monitor students as they work on searching for and gathering information.</li> <li>•Score worksheet and return feedback to teacher.</li> </ul>

## Student Evaluation (Attach Evaluation Rubric if used):

<b>What are the performance tasks and other evidence that shows the students understand the concepts?</b>	<ul style="list-style-type: none"> <li>• Following the lesson, students will complete a worksheet requiring them to use GapMinder to answer questions and draw inferences.</li> <li>•Worksheet will be collected and scored.</li> </ul>
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## Materials needed (check box or write in number needed if applicable):

<input type="checkbox"/>	Computers for 32 students in computer lab—90 minutes
<input type="checkbox"/>	Projector and demonstration computer
<input type="checkbox"/>	Worksheets for exercise

## LESSON ACTIVITIES

- Teacher introduces importance of statistics in evaluating and substantiating world events prior to visiting the library for this lesson.
- Librarian meets students in a library classroom to present the lesson.
- Discussion begins with short lecture on primary sources (United Nations data). Again, the importance of following statistics to substantiate and understand history is discussed. The relationship between countries and parts of the world can also be shown through statistics. Several historical examples are given as the GapMinder database is demonstrated to illustrate and make points.
- After demonstrating how to use the database with several historical examples, students are given worksheets requiring them to complete very similar tasks and draw inferences and conclusions.
- Librarian helps students with assignment in lab.
- Assignments are collected and scored by librarian.
- Teacher records a grade for the students.

## Outline for World Statistics Lesson: Riches/Busey

### 1. Ask students what forms of evidence can prove an argument or point.

Fact, Quotes, Examples, Stories, etc.

Statistics is another very important form of proof and a way to see what is going on over a broad range of data. Statistics allow us to see relationships and track patterns. They also can be a stronger form of proof than what people say or write. Today we will look at UN statistics.

### 2. Discuss UN statistics as a primary source.

### 3. GapMinder

This program allows us to look at world data in an animated tool that can track statistics over time. And show relationships. Show elements of tool.

Colors and areas of the world, size of circles, X and Y access, variables that can be tracked, trails button and fade button.

### 4. Question: What is the relationship between life expectancy and income across the world? Start the graph—watch all countries move across the grid over time.

Let's compare three countries on this dimension. Afghanistan, US and Japan.

Again start graph. Hover over final positions to discover incomes and life expectancy of each country. Trails for each can be viewed. (They were surprised at the life expectancy in Afghanistan!)

### 5. Do you think that poverty has lessened or increased in third world countries? Play and follow trail for Bangladesh. Note income: \$591 to \$1391 and life expectancy from 45 to 67 (1972-2007).

What has caused this? Go to Google and look at some reasons. Mention the informal economy of a country—microloans. What is it? Tie to current ThunderRidge fundraising plan.

### 6. Deselect Bangladesh and select Cambodia. Run trail from 1950 to present. What happened in the 70's that caused such a drop in life expectancy? Google or World Book—Pol Pot.

**SHOW VIDEO (Pol Pot)**

<http://video.google.com/videoplay?docid=-8713486037515004509>

### 7. Let's pick different variables. What is the relationship between infant mortality and number of children per woman. Run the graph. As children per woman drop so does infant mortality—especially in third-world countries.

## **8. Stalin and Russia: Statistics are proof.**

Let's look at another example—income and life expectancy in Russia (was USSR).

Set parameters, run graph. Huge dips in life expectancy—down to 12 years during the purges. (Lots of interest on the part of students.) Describe a few historical events.

### **SHOW VIDEO (Stalin)**

<http://www.youtube.com/watch?v=E1333fveKng>

Stalin tried to rewrite history to paint himself in a better light. But, what do the numbers tell us?

**Students are now given a worksheet and sent to the computers. Students begin answering questions using GapMinder. Rotate around and provide help where needed.**

## Student Worksheet Questions: World Statistics Lesson

Name \_\_\_\_\_

1. Open *GapMinder* at <http://gapminder.org/world> and click play. What geographic region is represented by the dark blue dots?
2. What geographic region is represented by the red dots?
3. Which of these two geographic regions has progressed more in terms of life expectancy and income per person?
4. Scroll down the Countries List and select Botswana. Click to select the Trails Box. Click Play. Moving the tab for the timeline, what was the life expectancy for this country during the 1990's?
5. What is the life expectancy of Botswana in 2000?
6. Open another browser and find the *World Book Online* database (ThunderRidge). Scroll to the fourth paragraph. What happened to this Country to change the life expectancy in the 1990's?
7. Click Deselect All. Click Play again. What country has the highest life expectancy?
8. Click on China in the Countries List. Slowly advance through the years to 1976—then from 1976 forward to 2005? What happened to the “income per person” from 1976 forward to 2005?
9. What happened in 1976 that might have changed the income per person going forward? See *World Book Online*—search China 1976.
10. Deselect China. Scroll down the Countries List and select the US, Mexico, Haiti and Cuba. Click Play. Which of these western hemisphere countries is the poorest both in terms of income and life expectancy?
11. Which two countries have the same life expectancy?
12. What is the income per person in these two countries?
13. Why do you think that the life expectancy if the same for these two countries? Use an online database to find an answer. Write a 5-sentence paragraph to explain your inference. (Answer on the back.)

## Evaluation of Lesson:

### My Evaluation of the Lesson

Date of Evaluation: April 4, 2009

<b>How well did your students succeed in meeting / answering the essential question?</b>	Students were very interested in the GapMinder program, data-generation and historical examples. When they were given the worksheet and began working in the lab, they were focused and interested in the task. I rotated around the room answering occasional questions. Most students knew how to use the program and were able to answer questions. The last question on the worksheet required them to draw an inference about the data they were seeing. Some students had questions about what the inference should be. We let them think through the question on their own. Some of the answers seemed a bit off base when the worksheets were reviewed. However, this last question required critical thinking. I would not remove the question.
<b>What worked during the lesson?</b>	I think this was a great lesson. Students were interested in the historical events discussed and the program provides animation and interest. Important points about the role of statistics in understanding and substantiating history were made and illustrated by this lesson.
<b>What are your suggestions for improvement?</b>	It would have been nice to have the students research all of the historical incidents we used ahead of time. By knowing the scenario and time period well even more learning could take place as the program was demonstrated and used. They didn't have enough context to put the illustrations in. However, the illustrations used clearly proved the point. They grasped the idea of what we were saying. We just didn't have time to really discuss the historical examples we pulled with enough depth. I would change this in the future—spend more time collaborating with the teacher on what examples could be used that they would have studied thoroughly.
<b>Are there materials / resources that you think should be added to the library?</b>	We had everything we needed for this lesson. It would be nice if we could have a quieter classroom environment to work in. The area of instruction is out in the library. There were students filing in and out. This is a very busy but small library in terms of space.

### Interview with teacher following lesson presentation

Again, I interviewed the teacher following the class. She liked the lesson. When she brought the second class back to the library for the lesson, she worked along with them on the task and closely followed our discussion with her laptop as we were presenting it.

The teacher and I discussed what a good exercise this was for the students. She said they always expect instant gratification—they just type in a term and expect everything to come up quickly. She thought it was good for them to work for these answers. She, too, liked making them use crucial thinking to draw inferences—whether they were spot on with everything or not. We asked the students what inference they drew about the last question. There were many answers—some made good sense. It was interesting to see how worried the students got about this last question. They didn't seem to think it was okay to take data and draw their own conclusion. At least this one lesson required them to do this.